

WHAT IS CLAIMED IS:

- 1 1. An apparatus for polishing objects, said apparatus comprising:
2 a polishing surface;
3 an object carrier positioned over said polishing surface; and
4 a load-and-unload cup configured to be pivoted to said object
5 carrier about a pivoting point over said polishing surface so that said object can be
6 transferred from said load-and-unload cup to said object carrier.
- 1 2. The apparatus of claim 1 further comprising a second object carrier
2 positioned over said polishing surface, and wherein said load-and-unload cup is
3 further configured to be pivoted to said second object carrier so that a second
4 object can be transferred from said load-and-unload cup to said second object
5 carrier.
- 1 3. The apparatus of claim 1 further comprising a second load-and-unload cup
2 configured to be pivoted to said object carrier about a second pivoting point over
3 said polishing surface so that a second object can be transferred from said second
4 load-and-unload cup to said object carrier.
- 1 4. The apparatus of claim 1 further comprising:
2 a second object carrier positioned over said polishing surface; and
3 a second load-and-unload cup configured to be pivoted to said
4 second object carrier about a second pivoting point over said polishing surface so
5 that a second object can be transferred from said second load-and-unload cup to
6 said second object carrier.
- 1 5. The apparatus of claim 4 further comprising a third object carrier
2 positioned over said polishing surface, wherein said load-and-unload cup and said
3 second load-and-unload cup are further configured to be pivoted to said third
4 object carrier so that a third object can be transferred from one of said load-and-
5 unload cup and said second load-and-unload cup to said third object carrier.

1 6. The apparatus of claim 4 further comprising third and fourth object
2 carriers positioned over said polishing surface, and wherein said load-and-unload
3 cup is further configured to be pivoted to said third object carrier so that a third
4 object can be transferred from said load-and-unload cup to said third object carrier
5 and wherein said second load-and-unload cup is further configured to be pivoted
6 to said fourth object carrier so that a fourth object can be transferred from said
7 second load-and-unload cup to said fourth object carrier.

1 7. The apparatus of claim 1 further comprising a second load-and-unload cup
2 configured to be pivoted to said object carrier about said pivoting point so that a
3 second object can be transferred from said second load-and-unload cup to said
4 object carrier.

1 8. The apparatus of claim 1 further comprising:
2 a second object carrier positioned over said polishing surface; and
3 a second load-and-unload cup configured to be pivoted to said
4 second object carrier about said pivoting point so that a second object can be
5 transferred from said second load-and-unload cup to said second object carrier.

1 9. The apparatus of claim 1 wherein said load-and-unload cup includes a
2 wafer handling lifter that can be vertically extended to load said object onto said
3 object carrier and unload said object from said object carrier.

1 10. A method for polishing objects, said method comprising:
2 pivoting an object to be polished to an object carrier about a
3 pivoting point over a polishing surface;
4 loading said object onto said object carrier;
5 moving said object carrier so that said object on said object carrier
6 is placed on said polishing surface; and
7 polishing said object on said polishing surface.

1 11. The method of claim 10 further comprising:
2 pivoting a second object to be polished to a second object carrier
3 about said pivoting point;
4 loading said second object onto said second object carrier;
5 moving said second object carrier so that said second object on said
6 second object carrier is placed on said polishing surface; and
7 polishing said second object on said polishing surface.

1 12. The method of claim 11 wherein said pivoting of said first object and said
2 pivoting of said second object includes pivoting first and second load-and-unload
3 cups about said pivoting point.

1 13. The method of claim 10 further comprising:
2 pivoting a second object to be polished to said object carrier about
3 a second pivoting point;
4 loading said second object onto said object carrier;
5 moving said object carrier so that said second object on said object
6 carrier is placed on said polishing surface; and
7 polishing said second object on said polishing surface.

1 14. The method of claim 10 further comprising:
2 pivoting a second object to be polished to a second object carrier
3 about a second pivoting point;
4 loading said second object onto said second object carrier;
5 moving said second object carrier so that said second object on said
6 second object carrier is placed on said polishing surface; and
7 polishing said second object on said polishing surface.

1 15. The method of claim 14 further comprising:
2 pivoting a third object to be polished to a third object carrier about
3 one of said pivoting point and said second pivoting point;
4 loading said third object onto said third object carrier;
5 moving said third object carrier so that said third object on said
6 third object carrier is placed on said polishing surface; and
7 polishing said third object on said polishing surface.

1 16. The method of claim 15 further comprising:
2 pivoting a fourth object to be polished to a fourth object carrier
3 about one of said pivoting point and said second pivoting point that differs from
4 said third object;
5 loading said fourth object onto said fourth object carrier;
6 moving said fourth object carrier so that said fourth object on said
7 fourth object carrier is placed on said polishing surface; and
8 polishing said fourth object on said polishing surface..

1 17. An apparatus for polishing objects, said apparatus comprising:
2 at least one polishing surface;
3 a first object carrier positioned over said at least one polishing
4 surface, said first object carrier being configured to hold a first object to be
5 polished;
6 a second object carrier positioned over said at least one polishing
7 surface, said second object carrier being configured to hold one of said first object
8 and a second object to be polished;
9 a load-and-unload cup configured to be moved between said first
10 and second object carriers to transfer one of said first and second objects to one of
11 said first and second object carriers; and
12 an object transport device configured to transfer said first and
13 second objects to and from said load-and-unload cup.

1 18. The apparatus of claim 17 wherein said at least one polishing surface
2 includes first and second polishing surfaces, and wherein said first object carrier is
3 positioned over said first polishing surface and said second object carrier is
4 positioned over said second polishing surface.

1 19. The apparatus of claim 18 further comprising:
2 a third polishing surface;
3 a third object carrier positioned over said third polishing surface;
4 and
5 a second load-and-unload cup configured to be moved between
6 said second and third object carriers to transfer said one of said second object and
7 a third object to one of said second and third object carriers.

1 20. The apparatus of claim 19 wherein said first, second and third polishing
2 surfaces are positioned in a linear configuration.

1 21. The apparatus of claim 18 further comprising:
2 third and fourth polishing surfaces;
3 third and fourth object carriers, said third object carrier being
4 positioned over said third polishing surface, said fourth object carrier being
5 positioned over said fourth polishing surface; and
6 a second load-and-unload cup configured to be moved between
7 said third and fourth object carriers to transfer one of said second object, a third
8 object and a fourth object to one of said third and fourth object carriers.

1 22. The apparatus of claim 21 wherein said first, second, third and fourth
2 polishing surface are positioned in an L-shaped configuration.

1 23. The apparatus of claim 17 wherein said load-and-unload cup includes a
2 wafer handling lifter that can be vertically extended to load said object onto said
3 object carrier and unload said object from said object carrier.

1 24. A method for polishing objects, said method comprising:
2 transporting an object to be polished to a load-and-unload cup;
3 moving said load-and-unload cup to an object carrier, said object
4 carrier being one of two object carriers to which said load-and-unload cup can be
5 moved;
6 loading said object onto said first object carrier;
7 moving said first object carrier so that said object on said first
8 object carrier is placed on at least one polishing surface;
9 polishing said object on said at least one polishing surface.

1 25. The method of claim 24 further comprising:
2 moving said load-and-unload cup to a second object carrier to
3 transfer one of said object and a second object, said second object carrier being
4 one of said two object carriers;
5 loading one of said object and said second object onto said second
6 object carrier;
7 moving said second object carrier so that one of said object and
8 said second object on said second object carrier is placed on said at least one
9 polishing surface; and
10 polishing one of said object and said second object on said at least
11 one polishing surface.

1 26. The method of claim 25 wherein said moving of said first object carrier
2 and said moving of said second object carrier include moving said first and second
3 object carriers so that said object on said first object carrier is placed on a first
4 polishing surface and one of said object and said second object on said second
5 object carrier is placed on a second polishing surface.

1 27. The method of claim 25 further comprising:

2 moving a particular load-and-unload cup to transfer one of second
3 object and a third object, said particular load-and-unload cup being one of said
4 load-and-unload cup and a second load-and-unload cup to a third object carrier;

5 loading one of second object and said third object onto said third
6 object carrier;

7 moving said third object carrier so that one of second object and
8 said third object on said third object carrier is placed on a third polishing surface;
9 and

10 polishing one of second object and said third object on said third
11 polishing surface.

1 28. The method of claim 25 further comprising:

2 moving a second load-and-unload cup to a third object carrier to
3 transfer one of said second object and a third object, including moving said second
4 load-and-unload cup to a fourth object carrier to transfer one of said second object
5 and a fourth object;

6 loading one of said second object and said third object onto said
7 third object carrier and one of said second object and said fourth object onto said
8 fourth object carrier;

9 moving said third and fourth object carriers so that one of said
10 second object and said third object on said third object carrier is placed on a third
11 polishing surface and one of said second object and said fourth object on said
12 fourth object carrier is placed on a fourth polishing surface; and

13 polishing one of said second object and said third object on said
14 third polishing surface and one of said second object and said fourth object on said
15 fourth polishing surface.

1 29. An apparatus for polishing objects, said apparatus comprising:
2 first and second polishing units, each of said first and second
3 polishing units comprising:
4 first and second polishing surfaces;
5 a first object carrier positioned over said first polishing
6 surface, said first object carrier being configured to hold a first object to be
7 polished;
8 a second object carrier positioned over said second
9 polishing surface, said second object carrier being configured to hold a second
10 object to be polished;
11 a first load-and-unload cup configured to be pivoted to said
12 first object carrier to transfer said first object to and from said first object carrier;
13 and
14 a second load-and-unload cup configured to be pivoted to
15 said second object carrier to transfer said second object to and from said second
16 object carrier; and
17 a wafer transport device configured to transfer said first and second
18 objects to and from said first and second load-and-unload cups of at least one of
19 said first and second polishing units.

1 30. An apparatus for polishing objects, said apparatus comprising:
2 a polishing surface;
3 first and second object carriers positioned over said polishing
4 surface, said first object carrier being configured to hold a first object to be
5 polished, said second object carrier being configured to hold a second object to be
6 polished, said first and second object carriers being further configured to
7 independently polish said first and second objects on said polishing surface.
8 a first load-and-unload cup configured to be pivoted to said first
9 object carrier to transfer said first object to and from said first object carrier; and
10 a second load-and-unload cup configured to be pivoted to said
11 second object carrier to transfer said second object to and from said second object
12 carrier.

1 31. The apparatus of claim 30 wherein said first and second load-and-unload
2 cups are configured to be pivoted about pivoting points over said polishing
3 surface.

1 32. The apparatus of claim 30 wherein said load-and-unload cup includes a
2 wafer handling lifter that can be vertically extended to load said object onto said
3 object carrier and unload said object from said object carrier.

1 33. A method for polishing objects, said method comprising:
2 pivoting a first object to be polished to a first object carrier
3 positioned over a polishing surface and a second object to be polished to a second
4 object carrier positioned over said polishing surface;
5 loading said first object onto said first object carrier and said
6 second object onto said second object carrier;
7 independently moving said first and second object carriers so that
8 said first object on said first object carrier and said second object on said second
9 object carrier are independently placed on said polishing surface; and
10 independently polishing said first and second objects on said
11 polishing surface.

1 34. The method of claim 34 wherein said pivoting includes pivoting said first
2 object about a first pivoting axis to said first object carrier and said second object
3 about a second pivoting axis to said second object carrier, said first and second
4 pivoting axes being located over said polishing surface.

1 35. An apparatus for polishing objects, said apparatus comprising:
2 at least one polishing surface;
3 at least one object carrier positioned over said at least one polishing
4 surface;
5 a first load-and-unload cup configured to be pivoted to said at least
6 one object carrier about a pivoting axis to transfer a first object to said at least one
7 object carrier; and
8 a second load-and-unload cup configured to be pivoted to said at
9 least one object carrier about said pivoting point to transfer a second object to said
10 at least one object carrier.

1 36. The apparatus of claim 35 wherein said pivoting point of said first and
2 second load-and-unload cups is located over said at least one polishing surface.

1 37. The apparatus of claim 36 wherein said at least one polishing surface
2 includes first and second polishing surfaces and said at least one object carrier
3 includes first and second object carriers, said first object carrier being positioned
4 over said first polishing surface, said second object carrier being positioned over
5 said second polishing surface.

1 38. The apparatus of claim 36 wherein said at least one polishing surface
2 includes first and second polishing surfaces and said at least one object carrier
3 includes first and second object carriers, said first object carrier being positioned
4 over said first polishing surface, said second object carrier being positioned over
5 said second polishing surface.